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Health Consultation No. 4

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Sediment/Soil Sampling Health Evaluation

PRECISION NATIONAL CORPORATION
(a/k/a PRECISION NATIONAL PLATING SERVICES INCORPORATED)

CLARKS-SUMMIT, LACKAWANNA COUNTY, PENNSYLVANIA

CERCLIS NO. PAD053676631

MARCH 1, 1999

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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Prepared by:

Pennsylvania Department of Health
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

SUMMARY

This Health Consultation (HC) was prepared by the Pennsylvania Department of Health (PADOH), under a Cooperative Agreement with the Agency for Toxic Substances and Disease Registry (ATSDR) to address community health concerns regarding exposure to hexavalent chromium in soil and sediment near the Precision National Plating Services Site (PNPS). PADOH and ATSDR evaluated hexavalent chromium levels in soil/sediment samples obtained by the Pennsylvania Department of Environmental Protection (PADEP) near the site and, based on that data, we determined that exposure to this contaminant should not harm the health of people who recreate in the Ackerly Fairgrounds, Ackerly Creek, or in the residential yards in the sample area. Conclusions and recommendations in this document are situation-specific and should not be considered applicable to any other situations.

BACKGROUND AND STATEMENT OF ISSUES

This document (along with ATSDR HC #3) addresses community health concerns associated with soil and sediment near the site. Specifically, PADOH and ATSDR evaluate the results of the PADEP's soil/sediment sampling and determine if a public health threat exists for people exposed to these media.

PNPS is a chromium plating facility and accompanying property at 198 Ackerly Road, approximately 0.75 miles north of Clarks Summit, Pennsylvania (Figures 1-2). The 46-acre property is located in a rural area. The chromium plating facility has operated from its inception in 1956 until 1971 for plating and machining locomotive crankshafts. In 1971, operations at the facility were limited to locomotive crankshafts. In 1975, the company added a cylinder-lining division and constructed an addition to the plant to accommodate the plating of cylinder linings [1].

The site is in a mountainous region of northeastern Pennsylvania at an elevation of approximately 1,190 feet above mean sea level (amsl). A topographic high of 1,240 feet amsl exists approximately 400 feet south of the facility. Based on topographic data, the direction of surface drainage at the site is to the north-northwest (downhill) at a gradient of approximately 660 feet per mile. The surrounding area is drained by Ackerly Creek, which flows past the Ackerly Fairgrounds and several residences toward Glenburn Pond (Figure 2) [1].

PADOH has been actively involved at the site since November 1997. On November 20-21, 1997, PADOH staff met residents who may have had past exposure to hexavalent chromium from the site and listened to their concerns. Although historic off-site soil and sediment sampling did not indicate the existence of a public health threat, residents who use the Ackerly Fairgrounds or their backyards for recreational purposes expressed concern that soils in these areas may be (or may become) contaminated with hexavalent chromium that was (or may be) deposited in these areas

from contaminated sediments in the Ackerly Creek during flooding. They desired to know if the health of their children would be affected from their use of these areas.

In response to this community concern, PADOH recommended soil and sediment sampling locations and committed to evaluate the results and determine the public health significance of residential or community exposure to these media. The locations include Ackerly Fairgrounds, Ackerly Creek, and other areas near PNPS. PADOH recommended the sampling locations giving special consideration to areas where children may play. ATSDR published our recommendations in October 14, 1998 HC #3 for the PNPS [2].

On October 21-22, 1998, Robert M. Stroman, Health Assessor, PADOH, accompanied Joe Iannuzzo, Project Officer, and John Mellow, Hydrogeologist, PADEP, who conducted sediment/soil sampling of the areas recommended in ATSDR's PNPS HC #3. Sediment/soil samples were obtained from areas along the Ackerly Creek, a tributary to Ackerly Creek, and at a pond along Old State Road. Also, sediment samples were obtained at three seeps upgradient of Ackerly Creek and soil samples were obtained at the Ackerly Fairgrounds, in the backyards of several homes along Ackerly Creek and in the yard of a home south and downgradient of the abandoned trolley tracks (Figure 2).

The soil/sediment were sampled for total chromium and hexavalent chromium. Total chrome ranged from 7.2 parts per million (ppm) in soil sample S15 to 76,814 ppm in sediment sample S32. Hexavalent chromium ranged from less than the detection limit of 1.0 part per billion (ppb) in the majority of the samples to 402 ppb in sediment sample S34.

CHILD HEALTH INITIATIVE

ATSDR and PADOH recognize that children are especially sensitive when exposed to many contaminants. For that reason, we base all our exposure scenarios and conclusions on children's exposure to site-related contaminants.

DISCUSSION

This discussion includes our rational for selection of sediment and soil sampling locations and our determination of the public health significance of the results of PADEP's October 21-22, 1998, sampling for chromium. All samples of total chrome were below ATSDR's March 1999 health based guidelines and these areas do not pose a threat to public health. The focus of our discussion is on hexavalent chromium because the hexavalent form of chrome is the metal's most toxic valence.

Sediment/soil samples were obtained from areas along the Ackerly Creek, a tributary to Ackerly Creek and at a pond along Old State Road. Sediment samples were also obtained at three seeps

upgradient of Ackerly Creek and soil samples were also obtained at the Ackerly Fairgrounds, in the backyards of several homes along Ackerly Creek, and in the front and backyard of a home near the abandoned trolley tracks. Sampling locations are identified on Figure 2.

Sediment samples (S-20 & S26-31) were obtained along the Ackerly Creek and (S-24, S-25) along an upstream tributary. These areas were sampled to determine if hexavalent chromium had migrated off the PNPS site in surface water and contaminated sediment in the Ackerly Creek at levels that could harm the health of children playing in the creek. The concentrations of hexavalent chromium in the sediment ranged from less than 1.0 ppb in S29-31 to 6.46 ppb in S-26. Sediment samples S-24 & S-25 were obtained from a tributary to Ackerly Creek which we believe has not been impacted by contaminated groundwater from the site. Both contained less than 1.0 ppb of hexavalent chromium. These levels are below health based guidelines. Exposure to the sediment should not affect the health of children playing in the Ackerly Creek or its tributary and the low levels of hexavalent chromium in the sediment do not pose a public health hazard.

During our initial site visits, we observed two distinct areas (S-14 & S-15) where children play outside of a home on the northeast side of Ackerly road. They play basketball on a driveway in front of this home and also play on backyard swings. During hot and dry weather the surface soil adjacent to the driveway and beneath the swings may have the tendency to become airborne when children play in these areas. The home is topographically downgradient of abandoned trolley tracks where hexavalent chromium had been previously detected in soils, but the soil samples were not obtained directly upgradient of this home [2]. Because the soils (along the trolley tracks) upgradient of this home may be contaminated with hexavalent chromium and may have migrated into this yard in surface water runoff from contaminated trolley track soils, we requested PADEP to sample surface soil in areas (S-14 & S-15) where the children are known to play to determine if a health hazard exists for them [2]. During PADEP's sampling, we were informed by the resident that their children also play in front of the home between two large shrubs. This location (S-13) was also sampled. Hexavalent chromium was either not detected or was estimated to be present at concentrations below the detection limit of 1.0 ppb in all of the samples. This is below health based guidelines and exposure to soils at this home should not affect the health of children or others recreating in the yard.

The yards of several additional homes along Ackerly Road (S16-18) as well as the Ackerly Fairgrounds (S-1-12) were sampled to determine if contaminated sediments were deposited on and became a component of soils in the yards and/or the fairgrounds during flooding and serve as a source for residential or public exposure during recreational activities. The fairgrounds are used by children for baseball and possibly other sporting activities. Hexavalent chromium was not detected in any of the soil samples. Consequently, people will not be exposed to hexavalent chromium at these locations and it would not affect the health of the families or the public recreating in Ackerly Fairgrounds.

Three seeps (S-32, S-33, & S-34) are located southeast of Ackerly Creek near Arch Avenue. The seeps are in a densely wooded area and have intermittent, seasonal flow. S-32 is also referred to as the "cinderblock seep" because the remains of old cinderblocks partially surround this seep. S-34 is also known as the "bathtub seep" because it feeds into an old bathtub. Hexavalent chromium was detected in sediment at these seeps at concentrations of 49.1 ppb, 72.8 ppb, and 402 ppb, respectively.

We expect contaminated groundwater to migrate preferentially from known contaminant source areas toward the seeps and Ackerly Creek. These seeps (S-32, S-33, & S-34) are along strike of a major joint set when projected from the former lagoon near the Precision facility (Figure 2). The seeps are also topographically downgradient from both the lagoon and the facility. Such a flow regime may explain the elevated chromium levels in sediment at the seeps and possibly in Ackerly Creek (groundwater discharge points). Although contaminated shallow groundwater water discharges at these seeps and has caused the sediments to also be contaminated, exposure (ingestion) to the sediments by children or others does not pose a threat to public health. It is unlikely that anyone would routinely ingest sediments from these areas.

There are two additional seeps (springs) that lie west of the site along Old State Road and feed a pond on a commercial property. The seeps are encased on three sides with a stone wall. The stones are arranged in a U-shape that maintains the integrity of the discharge points and prevents the surrounding soil from entering the springs. The height of the encasements is several feet which limits access to the seeps. Sediment samples (S-21 & S-22) were obtained where these springs discharge into the pond. Hexavalent chromium was detected in sediment samples S-21 and S-22 at concentrations of 1.14 ppb and less than less than 1.00 ppb, respectively.

There are two more seeps at the pond that are intermittent and cause the ground to be soggy during seasonal rainy periods but do not produce enough water to discharge into the pond. One area is located immediately northeast of the pond and soil was not sampled because at the time of the sampling it was not discharging and its exact location was difficult to determine. Another (S-23) is located between S-21 and S-22. Hexavalent chromium was detected in soil sample S-23 at a concentration of less than 1.00 ppb. The ponds and the seeps are topographically downgradient of the area behind the site.

It is unlikely that children or others trespass on the property where the pond is located and either scale the rock enclosures or enter the springs from the pond. We do not believe that exposure to sediment or soil at any of the seeps on the property is occurring and these media do not represent a public health hazard.

CONCLUSIONS

PADOH concludes that the site is not currently a public health threat for people recreating in the Ackerly Fairgrounds, Ackerly Creek, or for residents along Ackerly Road who recreate in their yards. The site has also not caused a public health hazard at the pond along Old State Road and

contaminated soils or sediments at the pond should not affect the health of people patronizing the commercial property where it is located.

PADOH also recognizes that sediments at the bathtub seep (S-34) and nearby seeps are contaminated with hexavalent chromium. While it is prudent to avoid exposure to these seeps, there is no indication that children (or adults) are routinely ingesting seep sediments and exposure to the sediments in this area do not pose a threat to public health. However, it important to note that health consultation #2 determined that surface water is significantly contaminated with hexavalent chromium. This further supports the need to avoid exposure at these seeps.

RECOMMENDATION

1. Meet with concerned citizens and other residents who expressed concerns that hexavalent chromium in off-site soils or sediments may affect their health and discuss the findings presented in this health consultation. PADOH will implement this recommendation.

PADOH will review additional data as it becomes available, determine its public health significance and make recommendations to protect the public health.

REFERENCES

1. Health Consultation #1
   U.S. Agency for Toxic Substances and Disease Registry, Health Consultation #1 for the Precision National Corporation, Clarks-Summit, Lackawanna County, Pennsylvania, CERCLIS NO. PAD053676631. Atlanta: ATSDR, October 15, 1998.

2. Health Consultation #3
   U.S. Agency for Toxic Substances and Disease Registry, Health Consultation #3 (Soil/Sediment Sampling Location Recommendations) for the Precision National Corporation, Clarks-Summit, Lackawanna County, Pennsylvania, CERCLIS NO. PAD053676631. Atlanta: ATSDR, October 14, 1998.

PREPARER OF REPORT

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CERTIFICATION

The Precision National Plating Services Site Health Consultation #4 has been prepared by the Pennsylvania Department of Health under Cooperative Agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated.

Roberta Erlwein
Technical Project Officer, SPS, SSAB, DHAC

The Division of Health Assessment and Consultation, ATSDR, has reviewed this Health Consultation and concurs with its findings.

Richard E. Gillig
Section Chief, SPS, SSAB, DHAC, ATSDR

Figure 1

Precision National Site Location Map

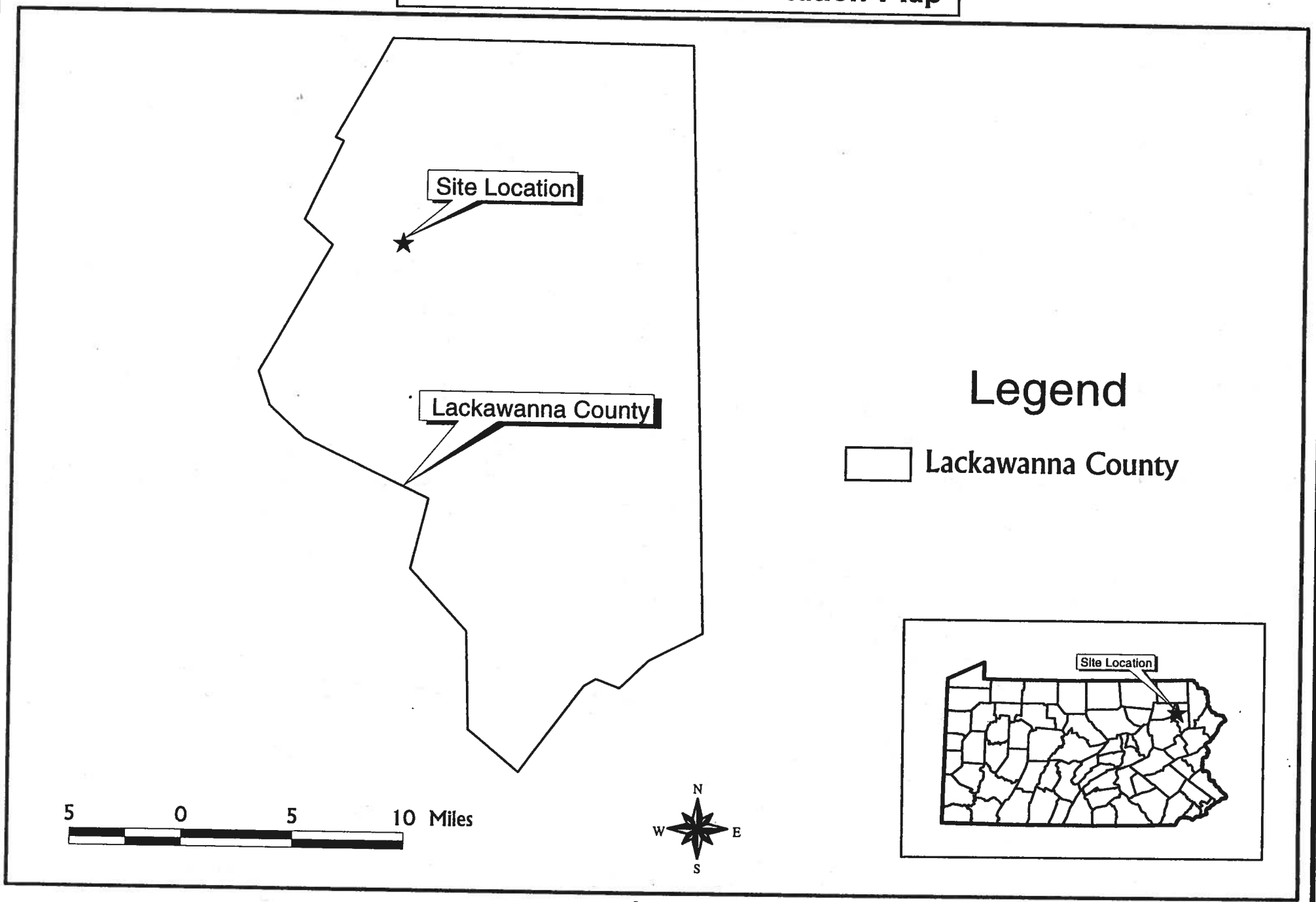

Figure 2

Precision National

Sediment/Soil Sampling Locations